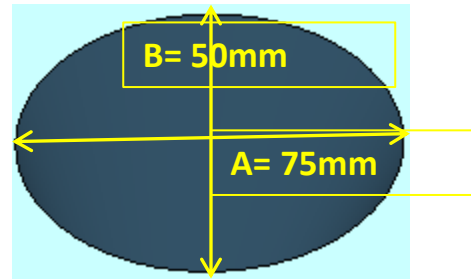
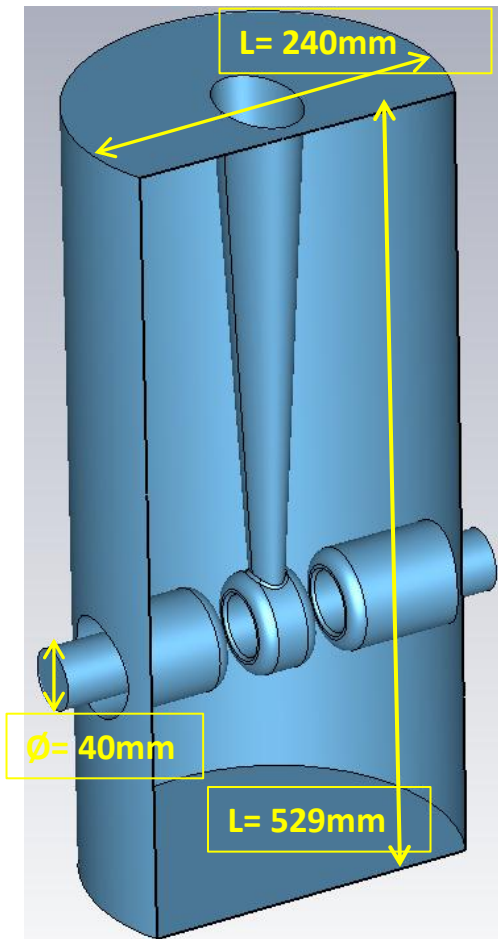


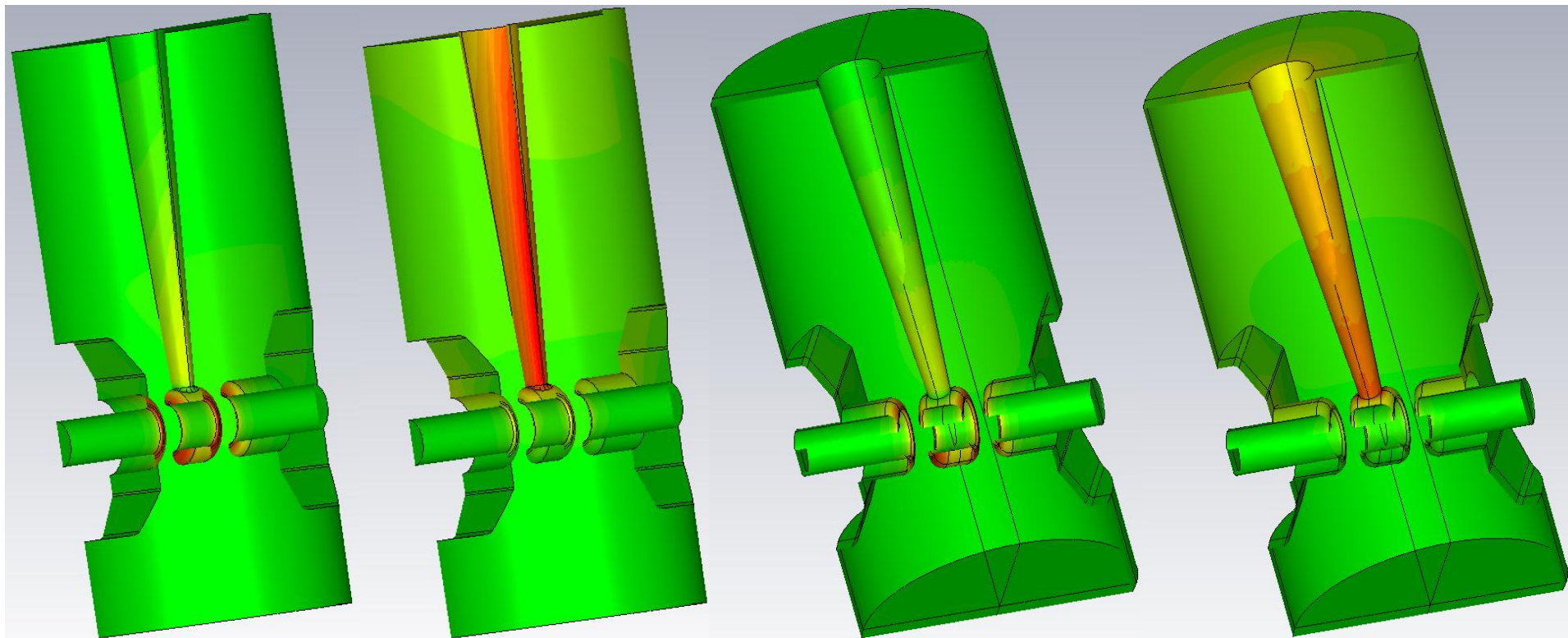
Re-Buncher RF Design overview



IPAC 2012 **THPPP063**

“CW Room Temperature Re-buncher
for the Project X Front End”

Q factor	10530
Aperture radius, mm	20
Gap, mm	2x23
Effective voltage ($\beta=0.067$), kV	70
Power loss in copper, kW	0.92
Effective shunt impedance, Ohm	5.3e6
Max. electric surface field, MV/m	4.2
Tuning range, kHz	440



	NEW ellipse	NEW conical
\varnothing , mm	40	40
Gap, mm	2x23	2x23
Effective voltage, kV	70	70
Q	10230	9970
R _{sh} , Ω	5.05e6	5.13e6
Power loss, kW	0.97 (+5.5)%	0.955 (+3.8%)

Ø of aperture 40 mm vs. 30 mm

----- Original Message -----

Subject: RE: QWR re-buncher aperture

Date: Fri, 20 Apr 2012 14:57:14 -0500

From: Valeri A Lebedev <val@fnal.gov>

To: Gennady Romanov <gromanov@fnal.gov>

Gena,

Presently the internal diameter of vacuum chamber in MEBT is ~28 mm. 30 mm ID in the cavity looks as a safe bet.

Valera

-----Original Message-----

From: Gennady Romanov

Sent: Thursday, April 19, 2012 5:08 PM

To: Valeri A Lebedev

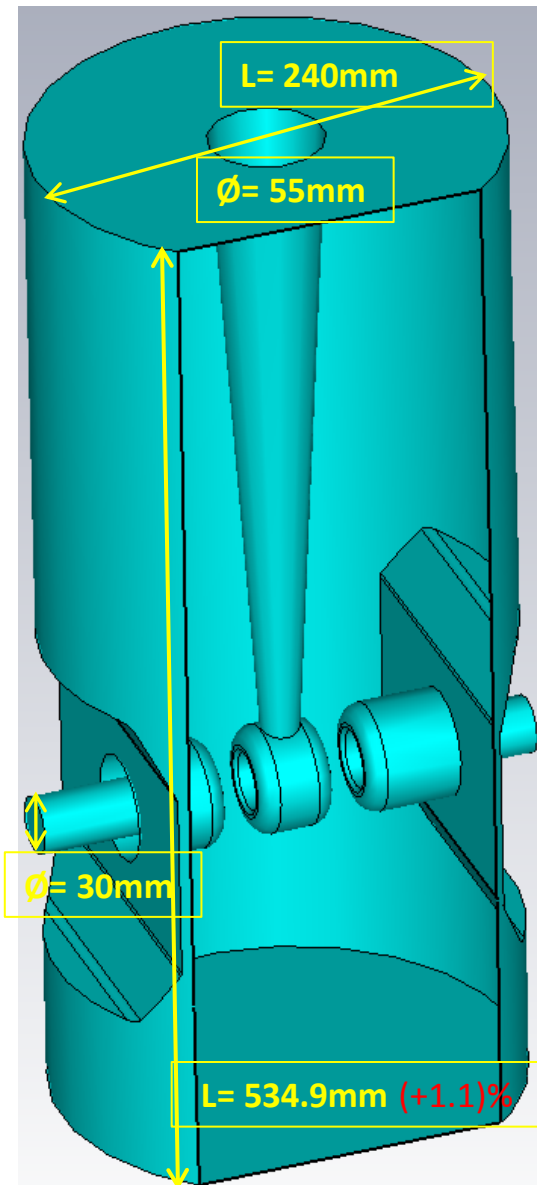
Cc: Ivan V Gonin

Subject: QWR re-buncher aperture

Hi Valeri,

Currently QWR re-buncher aperture diameter is 40 mm. On the other hand I was told that the diameter of beam pipes in the MEBT is 30 mm, so it seems reasonable to reduce the aperture in the re-buncher. It doesn't mean that we need badly to do that. May be we will not, because there are other reasons to keep the aperture big. But it would be useful to know the minimal allowed aperture for final design consideration.

Thanks,
Gennady



Q factor	10320 (-2%)
Aperture radius, mm	15
Gap, mm	2x23
Effective voltage ($\beta=0.067$), kV	70
Power loss in copper, kW	0.69 (25%)
Effective shunt impedance, Ohm	7.05e6 (33%)
Max. electric surface field, MV/m	3.6 (14%)